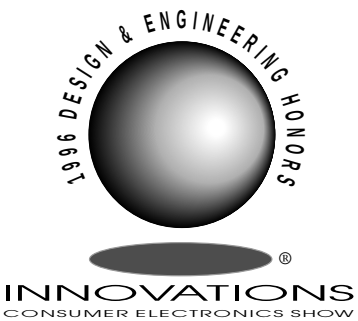
THIEL

Model CS6
Coherent Source®
loudspeaker system

OWNER INFORMATION



Congratulations on your purchase of the **THIEL** CS6 *Coherent Source*® loudspeaker system. The CS6 is the result of a long and dedicated effort to provide the most accurate music reproduction possible. We have used only the highest quality components and taken great care in the CS6's construction. Properly set up and used with good associated equipment, the CS6 will provide a great deal of musical enjoyment for many years.

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DESIGN PHILOSOPHY

The CS6 is a precision instrument designed to translate, as accurately as possible, electronic information into musical sound. All our efforts have been directed toward achieving extremely faithful translation of all tonal, spatial and dynamic information supplied by the amplifier.

The CS6 is not intended to mask or mitigate shortcomings of the recording or other components in the music playback system.

We believe this approach is the only way to provide the potential of experiencing all the subtle aspects that help make reproduced music a most enjoyable human experience.

Jim Thiel

POSITIONING THE SPEAKERS

Because of their unipolar radiation pattern and co-axial design, the CS6s will provide good results when placed in a variety of room locations. However, speaker placement will affect the accuracy of timbre, spatial performance, and bass performance. Here are some guidelines to help you achieve the best sound from your speakers. (The pointed metal stabilizer pins should not be installed until the final positioning has been determined.)

All aspects of speaker placement are dependent on the particulars of the room. Since every room is different, no hard rules can be given, and experimentation is necessary to achieve the best results.

Distance from walls

The CS6s, like most speakers, sound best if they are placed well away from all walls. Such placement optimizes imaging characteristics, and musical timbres are reproduced with the least coloration because the initial sound coming from the speaker is distinctly separated in time from the secondary sound of wall reflections. If reflections are heard too soon after the primary sound, the brain tends to interpret them as part of the initial sound, causing the perceived timbre to be altered and the spatial characteristics to be confused.

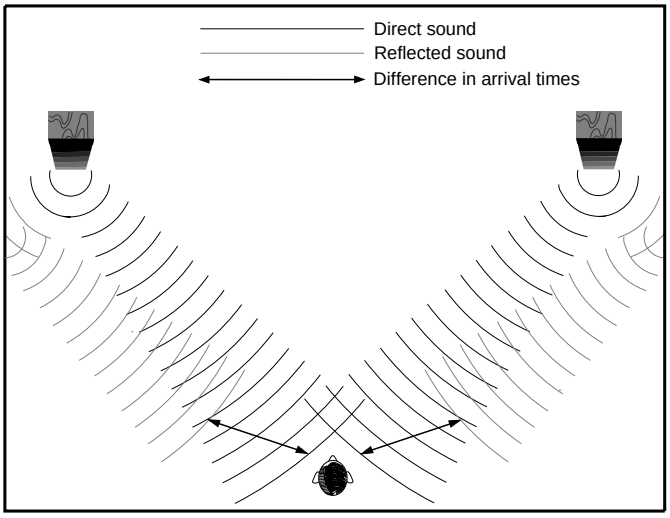


Figure 1. Early reflection problems caused by speakers placed too close to side walls

Figure 1 illustrates the problems caused by early side wall reflections. Sound waves from the loudspeakers radiate both forward, toward the listener, and laterally, reflecting off side walls. When the speaker is placed too close to side walls, the difference in arrival times of the primary sound waves and the reflected sound waves is too short for the brain to discriminate between them.

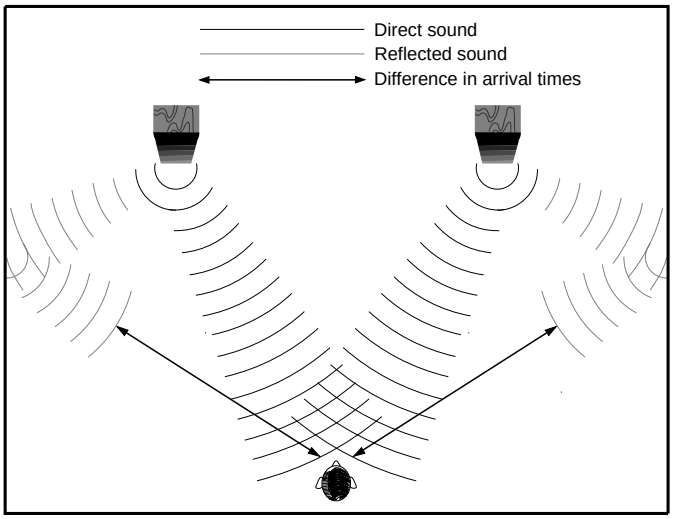


Figure 2. Optimum placement for reducing reflection problems

Figure 2 illustrates the advantages of placing the loudspeakers farther from side walls. The arrival times of the primary, forward radiating sound waves and the secondary, reflected sound waves are well separated, providing the proper delay needed for faithful tonal and spatial reproduction.

There will also be a noticeable improvement in openness when the speakers are even two feet from the rear wall instead of one. If possible, we prefer the speakers at least three feet from the rear wall and at least five feet from the side walls. Also, it is not desirable for large objects to be placed very near the speakers since these will also be a source of unwanted early reflections that reduce imaging accuracy.

Spacing

Because of their very wide, even dispersion of energy, the CS6s can usually be placed farther apart than most other speakers. Optimum imaging is usually achieved when the speakers are almost as far apart as each speaker is from the listener, although this will depend on the width of the room—narrow rooms require more narrow placement. If the speakers are too far apart for the room, there will tend to be a “hole” in the middle of the soundstage; if they are too close together, the image will be compressed and will not achieve optimum width.

Aiming

Depending on the room in which they are used, the CS6s can be aimed anywhere between straight ahead and angled in so they point directly at the listener. Straight-ahead placement produces the widest, most natural soundstage. However, if it is not possible to place the speakers the desired distance from side walls, a toed-in position will reduce the strength of side wall reflections and, in these cases, provide a more focused spatial presentation.

Bass

In general, when a speaker is close to a wall, the bass response is stronger; placing a speaker in a corner will make it even more so. The CS6s are designed to provide accurate bass when positioned away from all walls—the same position that provides the best imaging.

Listener position

The CS6s provide broad dispersion of energy at all frequencies and therefore provide good results throughout a large listening area. Best imaging is provided for a listener centered in front of the speakers. Optimum accuracy of timbre and depth perspective is provided only for a seated listener who is eight or more feet away from the speakers.

Placement suggestions

Some people have restraints on speaker placement because of room size, shape, or aesthetic considerations and cannot meet one or more of the above placement recommendations. They should not be discouraged from investing in CS6s. It is our opinion that due to their unipolar, point source radiation pattern, their very even, wide dispersion, and the co-axial mounting of the tweeter and midrange drivers, the CS6s fare better under difficult circumstances than most other high quality speaker systems. To help with placement, the following suggestions are given as a starting point for a variety of rooms.

Figure 3 shows an average size room. Generally, it is best to start with short wall placement. This arrangement provides sufficient space behind the speakers, allows the listener to be far enough away from the speakers, and still maintains some distance between the listening position and the wall behind the listener. Since the speakers may be near side walls in order to keep spacing between the speakers wide, toeing-in the speakers is suggested.

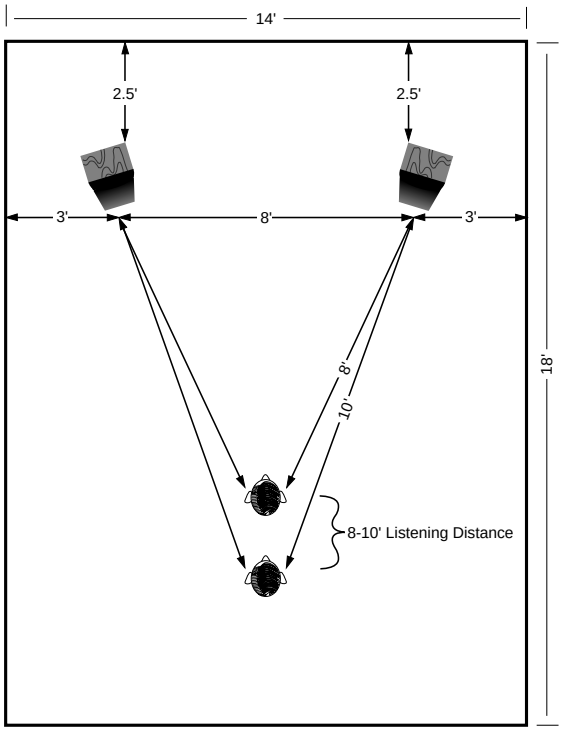


Figure 3. Average listening room

Some rooms, especially narrow ones, can benefit from placing the speakers along the long wall. Although space behind the speaker and behind the listener is reduced, this positioning increases the space between the speakers without side wall interference, and can improve overall performance. *Figure 4* shows the same average size room as *Figure 3*, but with long wall placement. The speakers should be at least a foot from the rear wall, but the amount of toe-in can be adjusted, along with listener position, as well as the amount of spacing between the speakers.

In a larger room, the optimum positioning suggestions on pages 2 and 3 are easier to implement. *Figure 5* shows one set-up with the speakers five feet from the side walls, three feet from the rear wall, and the speakers aimed straight ahead. This arrangement provides an ample amount of space around the speakers to reduce unwanted reflections and should give excellent spatial performance and a very "open" sound. Other placement options in this room include: wider spacing between the speakers, adding toe-in as the spacing increases; increased space between the speaker and the back wall to improve imaging depth. Various listening position distances can also be tried.

As mentioned at the beginning of the positioning section, all rooms are different and no hard rules can be given. Even rooms with similar dimensions can have differences in wall, floor and ceiling construction that greatly affect the sound. Also, "live" rooms with hard surfaces, glass, and little damping sound much different from "dead" rooms with heavy carpet, drapes and plush furniture. In other words—EXPERIMENT.

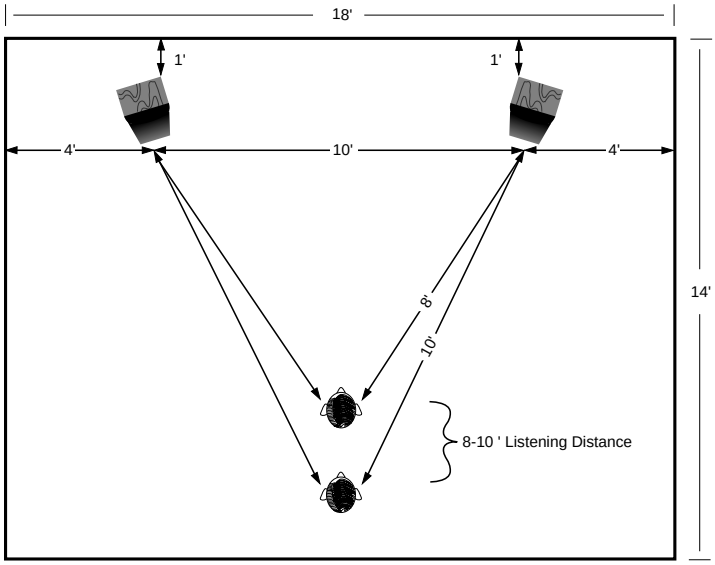


Figure 4. Average listening room with long wall placement

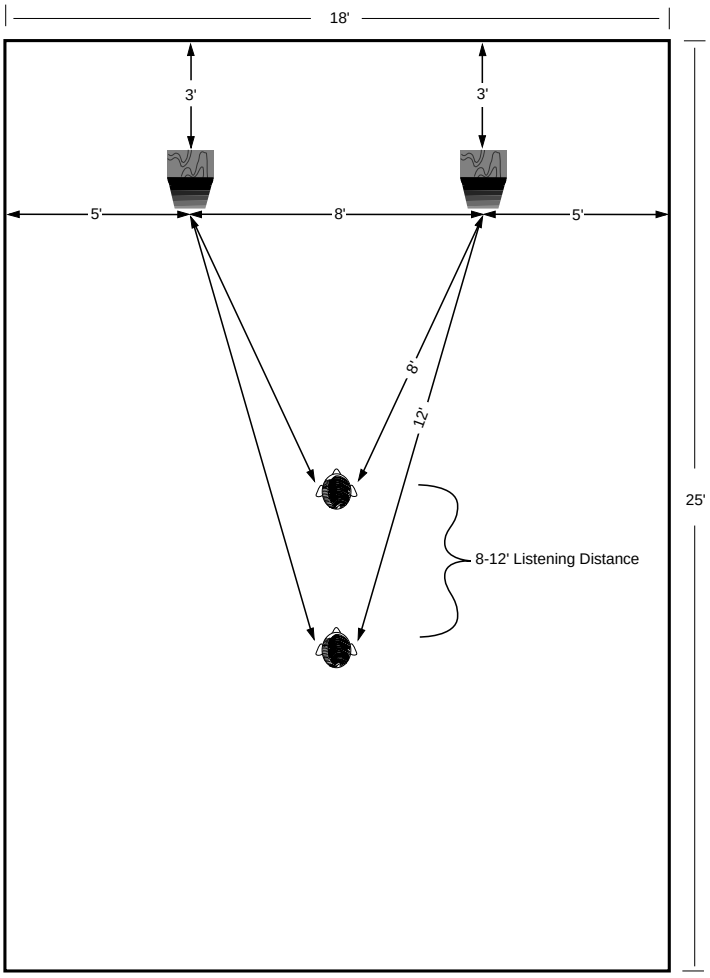
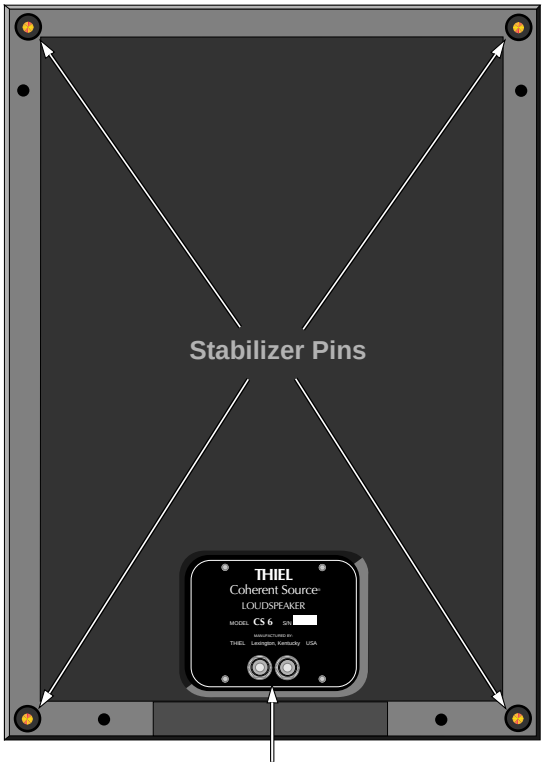


Figure 5. Large listening room speaker placement

CONNECTING THE SPEAKERS

The CS6s' input terminals are located on the bottom of the speaker near the back. Access is from the back with the speaker in its normal upright position. Make sure that both connections are *tight*. It is best to turn the amplifier off while connecting or disconnecting the speakers.

For proper performance, both speakers in a stereo system must be wired in the same polarity. The speaker input terminals are color coded for this purpose. The wire connected to the positive input terminal of each speaker, marked with a red band, should be connected to the corresponding positive (+) output terminal of the amplifier. The wire connected to the negative input terminal of each speaker, marked with a black band, should be connected to the corresponding negative (–) output terminal of the amplifier. The speakers should be connected to the amplifier with high quality audio cable to ensure minimal loss of power and proper control by the amplifier. If the speakers are being connected to a vacuum tube amplifier with various impedance taps, the 4 ohm tap will probably give the best results.



Bottom View

STABILIZER PINS

The speakers should be positioned before the stabilizer pins are installed.

Speakers positioned on a soft or uneven surface are able to rock slightly and will vibrate in reaction to forces the speaker generates to move the driver diaphragms. (Every action has an equal and opposite reaction.) This motion slightly reduces the music's clarity.

To eliminate this effect, the CS6s can be used with four metal stabilizer pins on uneven surfaces or on carpeted floors to provide a more solid footing. The points penetrate the carpet, allowing the speaker to couple more firmly to the floor. If the use of pointed pins is not desired on hard surfaces, the metal pin sockets will provide some stabilization.

Two people are required to safely install the stabilizer pins. To install:

• Position the speaker in the desired location.

• Tilt the speaker forward slightly so that the back of the speaker is a few inches off the floor.

• Screw one pin into each of the two holes at the back corners of the speaker. The pins should be screwed into the speaker until there is about ¼" of thread remaining visible.

• Let the back of the speaker down and then tilt the speaker backward slightly so that the front is a few inches off the floor and install the two front feet.

• With all four feet installed, the height of each foot should be adjusted so that the speaker stands firmly on the floor without wobbling.

Please be cautioned that the stabilizer pins can be dangerous if not used with care. They will dent or puncture hardwood floors and it is possible to damage carpets if the speakers are moved with the pointed feet in place.

BREAK-IN

The CS6s, like most speakers, require a period of playing before they perform optimally. The time required depends on how loudly the speakers are played; more time is required if played softly, less if played loudly. At least 50 hours at moderately loud levels are required before the speaker is performing near optimum. You should notice even more improvement after 100 hours of playing.

ASSOCIATED EQUIPMENT

The CS6s are very high quality sound reproducers and will benefit from use with the finest associated equipment. Because the speaker presents a lower than average load to the amplifier, an amplifier with high current capability is recommended. The amplifier should be specified to provide twice the power into a 4 ohm load and at least three times the power into a 2 ohm load as it provides into an 8 ohm load. Since the CS6s are extremely accurate transducers, they will reveal distortions or non-linearities generated anywhere in the system. Also, the quality of the interconnect and speaker cables will significantly affect the performance of the system.

POWER REQUIREMENTS

When selecting speakers, the second most commonly asked question by prospective buyers is “how much power do I need?” This question does not have the simple answer most people expect because it is determined by more than just the loudspeaker’s efficiency.

The first thing to keep in mind is that sound *quality* is usually much more important than sound *quantity*. There can be large differences in the sonic performance of two amplifiers of equal power, and a smaller powered amplifier can sound superior to a larger powered amplifier. Almost everyone will be happier with a 50 watt amplifier of high sonic quality than with a 200 watt amplifier of mediocre sonic quality. For this reason, we feel there is no substitute for listening to make your amplifier decision.

There are three almost equally important factors that determine how much power is needed for a given situation. In order of importance they are:

1. The volume level desired
2. The speaker’s efficiency
3. The size of the room. Each of these factors can make a 10-to-1 difference in the power required.

In the real world, if all 3 factors are average, about 50 watts/channel is required. Each factor can raise or lower this amount by a factor of about 3. Average values for each are:

- a volume level of 88dB SPL
- speaker efficiency of 87dB/W-m
- a room size of 3000 cu ft

The first factor is the most difficult to analyze or objectively determine. There are different ideas about what is “loud.” Some people do not want to play music above a sound pressure level of 88dB and some do not want to play music below 88dB. Usually, people who like to listen only at low levels can decrease their power by a factor of 2. People who like music at very loud levels, even if only occasionally, should increase their power by 2 times or more.

A speaker with a low 84dB/W-m efficiency will require twice the power of an 87dB speaker, and one with a high rating of 90dB/W-m will require only half the power of an average speaker. Usually, high efficiency can be obtained only by trading off sonic quality—there are very few speakers that provide a very high level of both. THIEL speakers are of average efficiency and therefore require an average amount of power.

A small room will need less power for a given loudness level than a large room. A very small room of 1000 cu ft (11 ft x 11 ft with an 8 ft ceiling) will usually require only half the power of an average room. A large room of

6000 cu ft (20 ft x 30 ft with a 10 ft ceiling) will usually require twice the average power. If the listening room is connected to another room by a large open area, the required power will increase—but not by the amount of the combined room volume. If the room has a "dropped" ceiling with lightweight panels, the ceiling will be almost transparent acoustically. In this case the space above the ceiling should be added. If the panels are heavy they will act more like a solid ceiling.

With all this in mind, a person who likes to play music only at lower levels, has a small room, and who has fairly efficient speakers can get the performance desired with only 20 watts; whereas, a person who sometimes likes to play loudly, has low efficiency speakers, and a large room may need 300 watts.

It is important to have enough power to play at the volume level you desire without distortion. If you play the speakers more loudly than the volume the amplifier can cleanly produce, the amplifier will produce overload (clipping) distortion. The sound will become compressed, strained, and in extreme cases, obviously distorted. This distortion is actually non-musical *additional* energy and since it is concentrated in the high frequency region where the speaker is least able to handle it, the tweeter's voice coil can be burned in extreme cases. Driver damage in general is usually the result of having inadequate power rather than having too much. If your system does not play as loudly as you would like without becoming distorted, you need a more powerful amplifier.

Remember that how loud your system plays has nothing to do with the position of your volume knob. Source components such as CD players and tape decks, as well as recordings themselves, can all have different output levels. This means that to achieve the same volume level for each source, your preamp's volume control may need to be set at a different position for each source. For example, when some high output CD players are used with lower power amplifiers, clipping can be reached with a volume knob setting as low as 4 on a scale of 10.

CARE

The cabinets possess a high quality lacquer finish that is both beautiful and durable. However, any wood finish can be damaged by excessive moisture, dryness, or direct sunlight.

When cleaning your speakers, avoid using oils, waxes, or polishes that contain silicone. We recommend Endust. Dusty grilles can be cleaned by using the upholstery attachment of a vacuum cleaner.

SERVICE

If your CS6s require service, contact your authorized THIEL dealer. Factory service information and technical support is available by calling 606/254-9427, Monday–Friday, 8:30 a.m.– 5:00 p.m. Eastern Time.

We Want You Listening For A Lifetime

Used wisely, your new sound equipment will provide a lifetime of enjoyment. Since hearing damage from loud noise is often undetectable until it is too late, **THIEL** and the Electronics Industries Manufacturers Association recommend you avoid prolonged exposure to excessive noise. Depending on room size and amplifier power, some home audio systems can reach sound pressure levels in excess of 95 decibels with peaks of over a 105 decibels. For your protection, the list below identifies sound levels for various noises.

Decibel

Level	Example
30	Quiet library, soft whispers
40	Living room, refrigerator, bedroom away from traffic
50	Light traffic, normal conversation, quiet office
60	Air conditioner at 20 feet, sewing machine
70	Vacuum cleaner, hair dryer, noisy restaurant
80	Average city traffic, garbage disposals, alarm clock at two feet

The Following Noises Can Be Dangerous Under Constant Exposure

90	Subway, motorcycle, truck traffic, lawn mower
100	Garbage truck, chain saw, pneumatic drill
120	Rock concert in front of speakers, thunderclap
140	Gunshot blast, jet plane
150	Rocket launching pad

Information courtesy of the Deafness Research Foundation and the EIA.

LIMITED WARRANTY

THIEL warrants every **THIEL** model CS6 system against defects in materials and workmanship to the original owner for a period of ten years from the date of purchase. **THIEL** will, at no charge, replace any defective part and make any repairs necessary to ensure its proper performance when the defective unit is returned to us postpaid.

This warranty does not cover damage due to accident or abuse and is void if the unit has been tampered with.

This warranty is automatic and no registration is required. This warranty gives you specific legal rights. You may also have other rights which are particular to your state.

The following information is for your records.

Serial Numbers_____

Purchase Date_____

Purchased From_____

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